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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,393	10/29/2003	Colt R. Correa	2485-000001/CPA	6397

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EXAMINER	
WEI, ZHENG	
ART UNIT	**PAPER NUMBER**
2192	
MAIL DATE	**DELIVERY MODE**
02/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,393	CORREA, COLT R.	
	Examiner	Art Unit	
	ZHENG WEI	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-8,10-12 and 14-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5-8, 10-12, 14-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. In view of the Pre-Appeal Brief Request filed on 12/14/2007, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

   To avoid abandonment of the application, appellant must exercise one of the following two options:

   (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

   (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

   A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

2. The 35 U.S.C. § 103 rejection to claims 1, 5-8, 10-12 and 14-19 is withdrawn in further view of the Applicant's arguments.

3. Claims 1, 5-8, 10-12 and 14-19 remain pending and have been examined.

Response to Arguments

4. Applicant's arguments filed on 11/13/2008, in particular on pages 12-22, has been fully considered.

- At page 12, second paragraph, the Applicants submit that "First, Karp does not disclose and is not directed to a method that changes the functionality of source code". However, it should be noted that claim language does not recite any limitations related to change the functionality of source code. Claim 1 merely directs to a method to change a value of a variable inside an executable program.
- At page 13, first paragraph, the Applicants submit that "Thus, Karp does not contemplate replacing an instruction In with another instruction, but rather contemplates inserting a hint instruction in an instruction stream or pipeline. However, the Examiner respectfully disagrees. As Karp disclosed at Fig.1, item 14, "Object Code Adapter" is used to replace instruction I3 with a break instruction B1. (see for example, paragraph[0021], "...the object code adapter 14 replaces the instruction I3 with a break instruction B1" [emphasis added]). Therefore, Karp does replace the identified instruction with another instruction as the Applicants argued.
- At page 13, last paragraph, the Applicants argue that "Second, Karp does not teach replacing identified machine instructions with a branch instruction that references an address outside an address space of the software program.". However, the Examiner's position is that Karp discloses the step of replacing identified instruction with a break instruction as discussed above. When said break instruction is executed, the hint code starts to run (see for example, paragraph [0022], "The hint code 64 is code to be executed by the process 10 when the break instruction B1 is executed"). Therefore said break instruction is functional equivalent to the branch instruction which redirects/relocates to execute another instruction (hint instruction) outside an address space of the executable software program.

- At page 15, second paragraph, the Applicants point out that "Third, Karp does not teach defining a set of relocated instructions referenced by the branch instructions, wherein the set of relocated instructions function to change a value of the variable. The Examiner's position is that Karp discloses defining a set of relocated instructions (hint code) (see for example, paragraph [0022], "The hint code 64 includes a hint instruction H1...and may includes additional instructions including additional hint instructions depending on the type of adaptation…"). The examples of the hint instruction as Karp disclosed are "a pre-fetch instruction" and "a branch prediction" wherein the "pre-fetch instruction" only fetch data from a memory using the pre-fetch address and write the data into a cache (see for example, paragraph [0023-0024]). The Examiner agrees that said hint instruction does not explicitly disclose changing the value of data and writing back to the memory ("change a value of the variable" as recited in the claim 1). Therefore, the rejection to claims in previous office action is withdrawn.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5-8, 10-12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karp (Karp et al., US 2003/0061598) in view of Voas (Voas et al., US 7,024,592)

Claim 1:

Karp discloses a method for controlling the value of a RAM variable inside an executable program, comprising:

- presenting a software program in executable form (object code) and having a plurality of machine instructions of a finite quantity of fixed lengths (see for example, Fig.1 element 60 and related text; also see p.1, [0019], lines 1-3, "The object code includes a sequence of instructions I1 though In object code");
- identifying at least one machine instruction that accesses a variable defined in random access memory associated with the software program (see for example, Fig.1, element 14, Fig.2, element 15, "Object Code Adapter" and related text; also see p.2, [0031], "uses the present techniques to adapt a set of object code");
- replacing the identified machine instruction in the executable form of the software program with a break instruction that references executable code including branch instruction to reference an address outside an address space of the software program (see for example, Fig.1, element 14, "O Object Code Adapter" and related text; also see p.1, [0020], "the object code adapter adapts the object code by providing hit instructions"; also see Fig.1, element 62 and related text; also see, p.1, [0021], "replaces the instruction I3 with a break instruction B1" [emphasis added]; also see paragraph [0022], "The hint code 64 is code to be executed by the processor 10 when the break instruction B1 is executed..." and related text);

- Defining a set of relocated instructions at the address referenced by the branch instruction, (see for example, paragraph [0020], "the object code adapter 14 generates a set of object code 62 and a set of hint code 64 in response to the object code 60" and related text); and
- Executing the executable form of the software program having the branch instruction (see for example, p.2, [0032], ""for execution by the processor by inserting a set of break instructions"; also see paragraph [0047], "the processor 11 branches to a target address specified in Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to hint register and inserts the address of the instruction that caused the break into the hint register 12").

But Karp does not explicitly disclose replacing the identified instruction directly with a branch instruction. However, the implementation of Karp using the break instruction and branch instruction together provides the same feature/functionality to use redirect/branch instruction to jump to a different memory address. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Karp's implementation to reference different memory address. Because Karp's implementation provides more flexible options that can include branch instruction and more additional instructions in the hint code (see for example, paragraph [0022], "…may include addition instructions…")

But Karp does not explicitly disclose ` using the set of relocated instructions

function (hint code) to change a value of the variable. However, Voas in the same analogous art of fault injection discloses a method to change the value of variable (data anomalies) (see for example, col.5, lines 35-40, "Fault injection usually creates data anomalies…The first involves changing a stored value to a new value based on the original value. The second involves change a stored value to something that is completely independent of the original value."). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include fault injection instruction in the hint code to further change the value of the variable. One would have been motivated to do so to simulate error state for software testing (see for example, col.4, lines 23-39)

Claim 5:

Karp further discloses the method of claim 1 wherein the step of identifying at least one machine instruction further comprises

- determining location information for the at least one machine instruction within the software program (see for example, p.1, [0021], "replaces the instruction I3 with a break instruction B1").

Claim 6:

Karp also discloses the method of claim 5 wherein the step of determining location information further comprises

- identifying an address for the at least one machine instruction using the image of the executable containing the machine instructions that comprise the executable (see for example, Fig.2 elements 11 Processor, 20 Memory, element 18 and element 15 Object Code Adapter and related text; also see Fig.4, steps 110 “Examine the Instruction Stream” and related text).

Claim 7:

Karp further discloses the method of claim 6 wherein the step of replacing the at least one machine instruction further comprises

- inserting the replacement instruction into a program memory image of the software program at said address (see for example, Fig.4, step 112, “Insert a Break Instruction into the Instruction Stream Where Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to Hint instruction is to be Executed” and related text).

Claim 8:

- Karp also discloses the method of claim [2] 1, wherein said branch instruction references a set of relocation instruction residing outside an address space for the software program (see for example, p.2, [0028] “the processor 10 may be designed to branch to a predetermined address”).

Claims 10-12 and 14-15:

Claims 10-12 and 14-15 are system version for performing the claimed method as in claims 1 and 5-8 addressed above, wherein all claimed limitation functions have been addressed and/or set forth above and certainly a computer system would need to run and/or practice such function steps disclosed by reference above. Thus, they also would have been obvious (see for example, Fig.5-6 and related text; also see, p.4, lines 10-42).

Claims 16-19:

Claims 16-19 are another version of the claimed method, wherein all claimed limitation functions have been addressed in claims 1 and 5-8 above respectively. Thus, they also would have been obvious in view of reference teachings above.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zheng Wei whose telephone number is (571) 270-1059 and Fax number is (571) 270-2059. The examiner can normally be reached on Monday-Thursday 8:00-15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. W./
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192